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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,751	12/11/2001	Matthew L. Babicki	6454-61583	6240

24197 7590 10/15/2003
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EXAMINER

LAWRENCE JR, FRANK M

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 10/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/021,751		BABICKI ET AL.	
	Examiner		Art Unit	
	Frank M. Lawrence		1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 73,74,76-89,91,98,100-110,122-127,150,151,154 and 159-257 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 82-89,91,98 and 100-110 is/are allowed.
- 6) ☒ Claim(s) 73,74,76-81,122-127,150,151,154,159-173,194-199,203-205,256 and 257 is/are rejected.
- 7) ☒ Claim(s) 174-193,200-202 and 206-255 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the recitation in claims 73 and 122 of "by a process other than dehydration" is not found in the specification.

Claim Objections

3. Claims 77 and 100 are objected to because of the following informalities: In line 2 of claim 77, "product a product" should be changed to ---produce a product---. In line 2 of claim 100, "a water" appears to be a typographical error. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 73, 74, 76-79 and 122-127 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The new recitation in claims 73 and 122 of "by a process other than

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dehydration" is considered to be new matter because applicant shows no evidence in the specification as originally filed that each and every process other than dehydration is envisioned in the invention. Claims 74, 76-79 and 123-127 are rejected as being dependent from rejected claims 73 and 122.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 101, 125 and 127 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The amendment to claim 101 renders it indefinite because zeolite Y is inclusive of the group of "zeolites." It is suggested that either "zeolites" or "zeolite Y" be deleted. The Markush groups in claims 125 and 127 are indefinite because it is unclear one of the items are claimed as being selected, or all of the items are claimed as being used together, because no recitation is used that would lead one to believe that only one of the group may be selected. It is suggested that the phrase "is selected from the group consisting of" be substituted for "include" to overcome this rejection.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 159, 160, 163, 164, 167, 168, 171, 172, 194, 195 203, 204 and 256 are rejected under 35 U.S.C. 102(b) as being anticipated by Sircar (4,756,723).

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10. Sircar ('723) teaches a process for preparing high purity oxygen, comprising passing a feed gas containing oxygen, nitrogen, and water through a PSA unit then flowing the oxygen rich product to a storage unit. The PSA unit includes four adsorbers, each having an inlet and outlet, a water adsorbent layer adjacent the inlet, a nitrogen adsorbent layer downstream of the water adsorbent layer, and valves in the inlets and outlets. The inlets are connected via valves to a purge outlet (breather). The adsorbents are periodically regenerated under reduced pressure (see figure 1, col. 2, line 61 to col. 3, line 66).

11. Claims 159, 163, 194, 203 and 256 are rejected under 35 U.S.C. 102(b) as being anticipated by Toyama et al. (3,594,984).

12. Toyama et al. ('984) teach a process for producing oxygen from an air stream, comprising passing air through a carbon dioxide and water adsorber followed by passing through a nitrogen adsorber with regeneration of the adsorbers. Outlet valves allow the passage of process fluid out of the adsorbers during operation.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 73, 74, 77, 79, 161, 165, 169, 173, 196, 198, 199 and 205 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sircar ('723) in view of Dangieri et al. (4,406,675).

15. Sircar ('723) discloses all of the limitations of the claims except that the PSA system is a fast cycle or non-conventional PSA system. Dangieri et al. ('675) disclose a fast cycle PSA

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system having a total operating time for each cycle of 2-10 seconds (col. 1, lines 11-22; claim 23). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the PSA system of Sircar ('723) by incorporating a fast cycle system in order to achieve a higher adsorbent productivity.

16. Claim 257 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sircar ('723).

17. Sircar ('723) discloses all of the limitations of the claim except that the contaminant sensitive adsorbent is replaced. It is submitted that one having ordinary skill in the art at the time of the invention would know that adsorbent replacement would be necessary when its adsorbing capacity has been diminished due to the buildup of permanently adsorbed materials to a point that renders the adsorbent no longer economically feasible.

18. Claims 76, 162, 166, 170 and 197 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sircar ('723) in view of Dangieri et al. ('675) and further in view of Mattia (4,452,612).

19. Sircar ('723) in view of Dangieri et al. ('675) disclose all of the limitations of the claims except that the adsorption apparatus is a rotary system having a rotor, stator and rotary valve surface and has a process cycle frequency of at least 10 cycles per minute. Mattia ('612) discloses a rotary PSA apparatus using a rotor and stator with cooperating valve surfaces for the separation and purification of gases and vapors continuously (col. 2, lines 22-40 and 57-59). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the PSA system of the prior art by using a rotary system in order to provide a continuous system using multiple beds that avoid the gas loss from the pressure release during desorption and have a high efficiency and flexibility at minimal costs. It is submitted that the cycle

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frequency is a parameter that would have been routinely optimized by one having ordinary skill in the art absent a proper showing of criticality, based on the desired level of adsorption and regeneration that will be achieved within the cycles.

20. Claims 80, 81, 150, 151 and 154 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKey et al. (4,127,395) in view of Dangieri et al. (4,406,675) and further in view of Mattia ('612).

21. McKey et al. ('395) disclose a PSA system for removing moisture from an air stream, comprising providing a PSA apparatus comprising adsorbers containing a moisture-sensitive adsorbent silica bed (69) and an upstream buffer desiccant bed (68) of activated for protecting the adsorbent bed from free water. The inlet ends of the beds are fluidly coupled to a purge exhaust (breather) through an isolation valve (97). Adsorbent degradation is reduced by providing heating elements near the feed end for regeneration of the most saturated parts of the adsorbent beds. The heating elements use resistance heating as well as heating with a heated fluid that is inherently produced when purge gas passes the heating elements upstream of the feed end extremity. The space in the product delivery end created by screens (66) meets the limitation of a product delivery compartment that receives a buffer (purge) gas, which has the same water vapor content as the product gas of the PSA system because it comes from the outlet of the on-line adsorber. During the purging of an adsorber, it is shut down with respect to producing product gas by stopping the delivery of product gas, purging with product flow from the on-line adsorber, and heating the buffer layer, which is subsequently cooled when the heating is discontinued (figure 3; col. 1, line 65 to col. 2, line 22; col. 4, lines 48-66; col. 5, lines 39-60;

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col. 11, line 44 to col. 12, line 10; claims 5, 6). The instant claims differ from the disclosure of McKey et al. ('395) in that the PSA apparatus is a fast cycle rotary one.

22. Dangieri et al. ('675) and Mattia ('612) disclose PSA systems as described in paragraphs 15 and 19 above. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the PSA system of McKey ('395) by providing a rotary or fast-cycle system for the reasons discussed in paragraphs 15 and 19 above relating to the modification of the Sircar system.

Allowable Subject Matter

23. Claims 82-89, 91, 98 and 100-110 are allowed.

24. Claims 174-193, 200-202 and 206-254 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

25. Applicant's arguments with respect to claims 73, 80, 150 and their dependents have been considered but are moot in view of the new ground(s) of rejection.

26. Applicant's arguments filed August 25, 2003 have been fully considered but they are not persuasive. Applicant argues that the McKey patent does not teach separation by a method other than by dehydration. The examiner agrees and different references have been cited to teach such a process. Also this recitation is considered to be new matter for reasons discussed in paragraph 5 above. Applicant also argues the applicability of the Dangieri and Mattia references in combination rejections, however it is submitted that these patents are cited only to show a motivation for using a fast cycle (Dangieri) or rotary (Mattia) PSA system.

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27. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

28. In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional references listed on the attached PTO-892 form disclose systems using upstream adsorbent beds for removing water from a gas stream prior to downstream adsorption fractionation.

30. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank M. Lawrence whose telephone number is 703-305-0585. The examiner can normally be reached on Mon-Thurs 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on 703-308-1261. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

Frank M. Lawrence
Primary Examiner
Art Unit 1724

Frank Lawrence
10-1-03

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